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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
PHAM, CHRYSTINE

ART UNIT	PAPER NUMBER
2192	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/646,374	K. N. ET AL.
	Examiner	Art Unit	
	Chrystine Pham	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>22 August 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-28</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>22 August 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to application 10/646374 filed on August 22, 2003. Claims 1-

28 are presented for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8, 10-28 are rejected under 35 U.S.C. 102(e) as being anticipated by

Pennello et al. (US 7,133,820 B2, "Pennello").

Claim 1

Pennello teaches a method of executing program on a non-native platform (see at least

simulation process, target system col.2:20-col.4:15), including the step of: i) executing a

plurality of programs in two or more software emulators (see at least *In-Circuit*

Emulators, processes col.2:20-col.4:15); wherein during the execution of the programs

at least one program monitors or controls at least one other program's threads or

processes using an interface (see at least *single thread of control, debugging, interface*

col.2:20-col.4:15; *abstract class, direct control, target processor, individual processes*

col.4:5-47; *302* FIG.3 & associated text).

Claim 2

The rejection of base claim 1 is incorporated. Pennello further teaches wherein each program executes within a separate software emulator (see at least *304, 310* FIG.3 & associated text; col.9:20-col.10:2).

Claim 3

The rejection of base claim 2 is incorporated. Pennello further teaches wherein the interface is between the software emulator of the monitoring/controlling program and the software emulator of the monitored/controlled program (see at least *302* FIG.3 & associated text; *debugger/simulator 302, hardware processes* col.9:20-col.10:2).

Claim 4

The rejection of base claim 3 is incorporated. Pennello further teaches wherein each software emulator is emulating the same platform (see at least *heterogeneous multiprocessor system* col.1:49-55; *simulator process 310* FIG.3 & associated text;col.9:50-67).

Claim 5

The rejection of base claim 4 is incorporated. Pennello further teaches wherein all the software emulators are executing on a single computer system (see at least *302* FIG.3

& associated text).

Claim 6

The rejection of base claim 5 is incorporated. Pennello further teaches wherein the

computer system is UNIX-based (see at least *UNIX-based operating system* col.11:9-

30).

Claim 8

The rejection of base claim 1 is incorporated. Pennello further teaches wherein the

monitoring/controlling program is a debugging program and the monitored/controlled

program is program to be debugged (see at least *312, 302* FIG.3 & associated text).

Claim 10

The rejection of base claim 1 is incorporated. Pennello further teaches wherein the

interface includes: i) a first module which interfaces with the software emulator of the

monitoring/controlling program (see at least *314, 316* FIG.3 & associated text); ii) a

second module which interfaces with the software emulator of the monitored/controlled

program (see at least *314, 316* FIG.3 & associated text); and iii) a framework through

which the first and second module communicate (see at least *312* FIG.3 & associated

text).

Claim 11

The rejection of base claim 10 is incorporated. Pennello further teaches wherein the framework is an inter-process data exchange mechanism (see at least *312* FIG.3 & associated text).

Claim 12

The rejection of base claim 11 is incorporated. Pennello further teaches wherein the inter-process data exchanges mechanism is an inter-process communications primitive (see at least *312* FIG.3 & associated text).

Claim 13

The rejection of base claim 12 is incorporated. Pennello further teaches wherein the inter-process communications primitive is any one selected from the set of pipe, socket, and shared memory area (see at least *312* FIG.3 & associated text).

Claim 14

The rejection of base claim 10 is incorporated. Pennello further teaches wherein the second module includes a thread which polls for requests received through the framework and services the requests when they arrive (see at least *debugging, process, status request, predetermined delay* col.5:35-col.6:50).

Claim 15

The rejection of base claim 10 is incorporated. Pennello further teaches wherein the first module processes trace and trace-wait system calls made by the monitoring/controlling program (see at least *execution traces* col.11:1-8; *102* FIG.1 & associated text).

Claim 16.

The rejection of base claim 10 is incorporated. Pennello further teaches wherein the second module services requests received from the first module through the framework (see at least *102, 106, 106, 122* FIG.1 & associated text).

Claim 17

The rejection of base claim 1 is incorporated. Pennello further teaches wherein each software emulator intercepts each entry into OS mode made by the emulated program and notifies the interface (see at least *execution history profiles, memory references* col.8:19-43).

Claim 18

The rejection of base claim 1 is incorporated. Pennello further teaches wherein the software emulator of the monitoring/controlling program and the software emulator of the monitored/controlled program execute on different computer systems (see at least *debugger/simulator, RISC, CISC, hardware processes, target CPU, heterogeneous multiprocessor system* col.9:20-67).

Claims 19-20

Claims recite limitations, which have been addressed in claim 15, therefore, therefore, are rejected for the same reasons as cited in claim 15.

Claims 21-24

Claims recite limitations, which have been addressed in claims 1-3, 8 and 19 therefore, are rejected for the same reasons as cited in claim 1-3, 8 and 19.

Claim 25

Pennello teaches a software for effecting the method of claim 1 (see at least Abstract).

Claim 26

Pennello teaches storage media containing software as claimed in claim 25 (see at least *RAM 404* FIG.4 & associated text).

Claim 27

Pennello teaches a computer system for effecting the method of claim 1 (see at least FIG.4 & associated text).

Claim 28

Pennello teaches a program debugged by the method of claim 24 (see at least

debugging programs col.4:5-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pennello in view

of Sandham et al. (US 2004/0158822 A1, "Sandham").

Claim 7

The rejection of base claim 5 is incorporated. Pennello does not expressly disclose

wherein each software emulator is a dynamic translation software emulator. However,

Sandham teaches a dynamic translation software emulator for emulating/executing

programs on non-native platform (see at least paragraph [0046]). Pennello and

Sandham are analogous art because they are both directed to software emulators. It

would have been obvious to one of ordinary skill in the pertinent art at the time the

invention was made to incorporate the teaching of Sandham into that of Pennello for the

inclusion of dynamic translation software emulator. And the motivation for doing so

would have been to minimize the delay of static translation (see at least Sandham

paragraph [0046]).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pennello in view

of GDB Developers (GDB: The GNU Project Debugger,

http://web.archive.org/web/20030812220515/http://www.gnu.org/software/gdb/).

Claim 9

The rejection of base claim 8 is incorporated. Pennello does not expressly disclose

wherein the debugging program is a gdb-based debugger. However, GDB Developers

teache wherein the debugging program is a gdb-based debugger for debugging

programs executed on non-native platform (see at least **What is GDB?**). Pennello and

GDB Developers are analogous art because they are both directed to software

debuggers. It would have been obvious to one of ordinary skill in the pertinent art at the

time the invention was made to incorporate the teaching of GDB Developers into that of

Pennello for the inclusion of gdb-based debugger. And the motivation for doing so

would have be able to specify conditions that might affect the debugged program's

behavior, modify the program, and enable the debugger to see what is going on `inside'

the program being debugged while it executes -- or what the program was doing at the

moment it crashed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chrystine Pham whose telephone number is 571-272-3702. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CP
November 12, 2006

TUAN DAM
SUPERVISORY PATENT EXAMINER